Alec Greene

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Motivated, passionate self-starter with a background in theoretical number theory and AI Algorithms. Experience with self-learning complicated topics, performing academic research, and collaboration on complex projects. Studied number theory for 6 years, concurrently taking courses in software development for 4 of those years.

Technical Skills

Game Engines: Unity, Unreal 4
FrontEnd: HTML5, CSS, JQuery, Bootstrap, AJAX, React, React-Native, P5.js
BackEnd: Node.JS, Express+Handlebars, MongoDB, MySQL, Axios, IndexedDB
APIs: Tensorflow, Socket.io, Passport, React-Hooks, Styled-Components
Languages: JavaScript, C#, C++, TypeScript, Python, Java

Projects

Ashen Void (MSU Bootcamp Final Project)

Repo https://github.com/AlecWGreene/MSU-Project3-Four-Horsemen
Deployed ashen-void.herokuapp.com

- **Description:** A React-based tower defense game featuring a twist on the mainstream formula and crisp audio/visual effects, complete with account creation and save games.
- **Summary:** Built a custom game engine using the Entity-Component-System architecture, and hooked it up to React using a context provider which passes through a reducer state and dispatch allowing the UI to update information displays and update the game manager from user actions. Configured these systems to perform user input, animation, and sound effects while managing the project which included coordinating 4 people working on a full stack app.
- **Technologies:** JavaScript, React, Express, Passport, Styled-Components, use-sound.js, OAuth

Lyric Generator (UofM EECS 183 Final Project)

- **Description:** Given a collection of Disney lyrics, generates simulated Disney lyrics using Markov chains and then uses Text-To-Speech to “sing” them.
- **Summary:** Assembling a small collection of Disney lyrics in text files, the generation algorithm used a weighted random selection using Markov chains, then generated a beat pattern to match the chain pattern that was used. After this was compiled, a python synthesizer library and Amazon AWS’ text-to-speech API gave the project it’s finishing touches by audibly performing the lyrics. At the final symposium for the course, the project received an award from Facebook’s representatives for most creative project.
- **Technologies:** Python, Git, Amazon AWS

Work Experience

Outback Steakhouse April 2016 - November2020

- Hired as a host, was promoted to server
- Gained valuable experience working with different types of coworkers in a high-stress environment, balancing assisting coworkers and managing my own responsibilities.

UofM Undergraduate Research Opportunities Program April 2018 - August 2019

- Submitted a paper *On the Approximation of Quantum Gates using Lattices* (arXiv:1506.05785) to the journal *Quantum Information and Computation* based on part original research and part assimilated research performed by the research mentor's previous work.
- Quickly adapted to a complex topic in a unfamiliar field, applying a learned knowledge base to conduct academic research in the field of quantum computing
- Gave a 60 minute seminar to graduate students on the paper at Indiana University - Purdue University Indianapolis (IUPUI).
- Rigorously designed a proposal for a workshop to be hosted during the annual meeting of American Institute of Mathematics (AIM), and used networking to assemble a list of invitees doing relevant work including several researchers at Microsoft's cryptography research group and Yuri Gurevich.

Michigan State Youth Soccer Association (MSYSA) September 2009 - August 2017

- Tracked and analyzed the FIFA regulations, USSF regulations, and MSYSA regulations which all were updated annually.
- Moved upwards from refereeing Under-8 Rec leagues to Under-18 Premier leagues and High School Soccer games.
- At a young age, learned how to resolve conflict and handle stressful situations professionally.

Education

Michigan State University Enrolled March 2020 - November 2020

- Graduated from fullstack web-development bootcamp, and self-taught Typescript/React-Native
- Completed units include: HTML+CSS, Bootstrap, Git, APIs, NodeJs, Express, MySQL, MongoDB, Sequelize, Express-Handlebars, PWAs, React, Comp Sci (Algorithms, MVC, OOP)
- Was project manager of each team project, receiving multiple requests to join my third team

University of Michigan Enrolled 2017-2018, Dual Enrolled 2012-2015

- Studied theoretical math, specializing in number theory and in particular representation theory based cryptographic encryption systems.
- Took courses on subjects such as: group theory, combinatorics/graph theory, theoretical multi-variable calculus, abstract manifolds, Japanese, and German
- Completed the EECS 183 course, where I learned C++, python, team-based development, and many code structures/practices which I still apply in my work to this day.

Eastern Michigan University Enrolled September 2016 - July 2017

- Mostly completed general education requirements, but also took courses on subjects such as: Independent study on representation theory, Cryptography (implemented RSA Diffie-Hellman using python), CompSci 111 (used Java to build simple apps), Japanese, and German

Oxford Tutorial College (Gap Year) Enrolled September 2015 - July 2016

- Received one-on-one tutoring on module-based representation theory, as well as French and Japanese. The math course required some python scripts to perform calculations.
- Assisted my instructor with his research pertaining to demonstrating that a particular group had a finite commutator length but infinite restricted commutator length